

AFRP- Annual Workplan 2000

Initial Scope of Work to:

**Evaluate channel restoration and aggregate source potential for
Two-Mile Bar on the Stanislaus River**

PROPOSED AFRP CONTRIBUTION: \$ 50,000

An Initial Scope of Work Submitted by:

The Anadromous Fish Restoration Program

I SCOPE OF THE PROJECT

Project description: The Two-Mile-Bar project has the goal of restoring the floodplain and sediment processes in a critical spawning and rearing reach of the Stanislaus River. The Two-Mile-Bar Reach extends from rivermile (RM) 56.8 to RM 56.3 and is one of only two floodplain areas in the four mile long Goodwin Canyon. This project will provide the funding to: 1) assess the floodplain restoration potential of a 50-acre parcel within this reach and 2) concurrently provide the aggregate and mineral appraisal process to proceed to establish a fair market value for the land and provide the basis for acquisition in either fee or easement. The AFRP has been in contact with the willing landowner who has expressed an interest in moving forward with this phase of the project. The AFRP has also been coordinating this opportunity with the COE who own and manage a Stanislaus River Park on the opposite riverbank and would be the likely land steward should this project proceed to the acquisition phase.

The work includes field surveys of the existing Two-Mile-Bar floodplain and hydraulic modeling to evaluate different floodplain manipulation restoration alternatives. The survey information will be used to conduct more detailed hydraulic modeling on conceptual restoration designs to evaluate resultant water velocities and depths and channel shear stress to predict potential benefits to spawning and rearing habitat for fall-run chinook salmon and steelhead at the site. This effort will allow managers to decide what floodplain manipulations, if any will maximize channel and floodplain forming processes in this reach of river.

The material appraisal and assessment will provide an assessment of the amount of aggregate material that is present on the property and could be used for gravel additions to benefit spawning and rearing habitat downstream of downstream sites which are lacking good quality spawning habitat. Floodplain aggregate appraisals are technical in nature and are not within the purview of the US Fish and Wildlife Sacramento Realty Office. The Service's Sacramento Realty off will be able provide the appraisal of agricultural value which combined with the mineral appraisal will provide the foundation for an offer to acquire the Two-Mile Bar Property in either fee or easement.

Participants and collaborators: This initial Scope of Work is being prepared with the knowledge of the Stanislaus River Fisheries Technical Group and is consistent with their efforts to proceed with restoration planning for the entire Stanislaus River corridor while at the same time pursuing restoration opportunities that are consistent with a long-term restoration approach for the system. The COE participates in this forum and they have been individually engaged on this project because of their nearby Two-Mile-Bar landholding and an interest in obtaining at least a flowage easement for this property. Earlier this year the Stockton East Water District expressed interest in collaborating on a river restoration project similar to their current involvement with a spawning gravel restoration and evaluation project currently being implemented by Carl Mesick Consultants. The AFRP will continue to seek partnership and support from this Stakeholder.

II JUSTIFICATION FOR THE PROJECT

An emerging body of knowledge is beginning to recognize the importance of seasonal floodplain inundation and the habitats that are formed and maintained by dynamic geomorphic processes. However, this river and floodplain connection and interaction has been decoupled and minimized, respectively due to the construction of flood control structures that include dams and dikes. Restoring the Two-Mile-Bar floodplain has the objective of increasing deposition of gravel in the project reach that will help rebuild spawning riffles for steelhead (*Oncorhynchus mykiss*) and fall run chinook salmon (*O. tshawytscha*) in a section of river that lacks plentiful spawning habitat (Mesick 1998). This reach is particularly important for spawning habitat because intrusion of fine sediment from erosion is minimal, and water temperatures for spawning and rearing are more favorable compared to downstream habitats (Mesick 1998). Also, an expanded floodplain in this section of river would provide additional good quality rearing habitat during high winter and spring flow conditions. The incised nature of the Stanislaus River is thought to limit the amount refugia available during high flows as well as increase channel shear stress which can lead to bed coarsening and a fossilization of the stream channel. Juvenile salmonids also generally have more rearing habitat availability when submerged riparian vegetation and woody debris on the floodplain is inundated during high flows. Submerged floodplains also provide a substantial input of invertebrates and organic debris during higher flows that augment the aquatic food chain. The California Department of Fish and Game currently adds spawning gravel to several upstream Goodwin Canyon sites which have been used heavily by spawning salmon in the last two years. Juveniles produced and distributed from upstream production areas will benefit from floodplain improvements at Two-Mile-Bar.

Fall run chinook salmon and steelhead would benefit from this action. The Stanislaus River is the only tributary of the three San Joaquin River Tributaries where steelhead have consistently been documented. Improving spawning and rearing opportunities for steelhead in a section of river that is very likely the primary steelhead production area provides additional importance to this restoration opportunity.

Compatibility with AFRP restoration objectives: This project supports Stanislaus River Action 2 “Improve watershed management and restore and protect instream and riparian habitat, including consideration of restoring and replenishing spawning gravel and performing an integrated evaluation of biological and geomorphic processes” in the Revised Draft Restoration Plan for the AFRP.

III MONITORING AND DATA EVALUATION

Specific monitoring elements will be established if acquisition and restoration occur.

IV WORK TO BE PERFORMED AND DELIVERABLES

Project approach and tasks: The project consists of two basic elements that include funding to assess the floodplain restoration potential of a 50-acre parcel within this reach and at the same time allow the aggregate and mineral appraisal process to proceed to establish a fair market value for the land and provide the basis for acquisition of a restoration easement or fee title

Task 1: Hydraulic modeling, engineering analysis, and restoration planning

- A) Channel and floodplain cross section and thalweg surveys will be conducted to provide information that will be used in the development of hydraulic models that will be used to assess existing conditions and to evaluate the potential channel and floodplain response to different restoration alternatives.
- B) Hydraulic models will be prepared and run using the Corps of Engineers HEC-RAS modeling package:
- **Existing conditions:** An engineer and geomorphologist will prepare an existing conditions hydraulic model that will be validated using rating curve information generated from the survey information and subsequent calculations of Manning's "n" value.
 - **Proposed conditions and restoration alternatives:** The existing conditions model will be modified to reflect proposed restoration configurations that are developed by a multi-disciplinary team with consideration for riparian, floodplain, and fisheries values and needs.
- C) Engineering and geomorphology draft report that summarizes the HEC-RAS model preparation, construction, assumptions and results. These will be interpreted by the multi-disciplinary team and a preferred floodplain restoration strategy identified.
- D) Prepare a final report that summarizes the restoration planning effort and identifies a preferred restoration strategy.

Estimated cost: \$35,000

Deliverable: Draft and final floodplain restoration summary report

Task 2: Aggregate and mineral appraisal process to proceed to establish a fair market value

- A) Work with the USFWS Sacramento Realty office to secure a minerals appraiser for the 50 acre Two-Mile-Bar parcel. Identify the appropriate appraisal process to meet Interior appraisal standards
- B) Use the USFWS Sacramento Realty Office to appraise the remaining agricultural value of the property.

Estimated cost: \$15,000 (A only)

Deliverable: USFWS approved appraisal that integrates A and B above.

V BUDGET

The total cost for this project is only roughly estimated at this time. Engineering and restoration design values are based on a previous effort for similar work.

If funded the effort is estimated to take one year to complete.